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## A ~10 km RESOLUTION IMAGE OF LOKI AT 3.8 $\mu$ m

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A major eruption at Loki Patera began in December 1990 and continued into March 1991. Simultaneous 3.8 and 10  $\mu$ m radiometry at the IRTF of a series of occultations of Io by Europa during this period is used to develop a detailed quantitative picture of this eruption and its evolution.

From the times of disappearance and reappearance of hot spot thermal emission behind Europa's limb, the latitude and longitude of the eruption site can be determined to better than 100 km. The site of the 1991 eruption was the SW corner of Loki Patera. In the Voyager images, the SW corner contains a ~20 x 50 km region that has the lowest albedo in Loki Patera, suggesting that this site may undergo recurrent activity. Specifically, there is no significant signature in the occultation data of thermal emission from the dark linear "fissure" ~250 km NE of Loki Patera that was the site of 2 plumes detected in the Voyager images.

The 3.8  $\mu$ m occultation radiometry has sufficient signal-to-noise to reveal the 1-dimensional structure of the thermal source region at a scale of ~10 km. This hottest component of the emission emanates from 2 narrow (10-30 km wide) N-S oriented "fissures" ~50-100 km in length and separated by ~100 km.

Pairs of 1-dimensional scans with different orientations of Europa's limb corresponding to disappearance and reappearance were obtained on 5 different dates. We will attempt to reconstruct a 2-dimensional image from these 10 scans, assuming constancy of the 3.8  $\mu$ m source region.

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